What is claimed is:

1. Apparatus for providing a wireless wide area network for a neighborhood of residences comprising:

a neighborhood gateway for receiving a plurality of signals, selecting specific signals from said plurality of signals and transmitting the selected signals through an antenna; and

a plurality of receivers for receiving said transmitted signals, where at least one receiver is located in a residence and each of the receiver converts the transmitted signal into a format that is compatible with a network appliance.

2. The apparatus of claim 1 wherein said plurality of signals comprise one or more signals selected from a group comprising analog cable television, digital cable television, plain old telephone signals, Digital Subscriber Line signals, satellite television signals, over-the-air television signals and any combination thereof.

3. The apparatus of claim 1 further comprising a transmitter coupled to said network appliance for transmitting a signal selection signal to said gateway.

4. The apparatus of claim 1 wherein said gateway comprises a transceiver for transmitting said selected signals and for receiving control signals from said network appliances.

5. The apparatus of claim 1 wherein said receiver comprises at least two antennas.

6. The apparatus of claim 5 wherein said receiver further comprises a spatial diversity combiner coupled to said at least two antennas.

7. The apparatus of claim 4 wherein said transceiver comprises a spatial diversity combiner and a plurality of antennas.

8. The apparatus of claim 5 wherein said receiver comprises:

a tuner coupled to each antenna;

an analog-to-digital converter coupled to each tuner;

a timing recovery circuit coupled to each analog to digital converter;

a spatial equalizer for each digitized signal;

a combiner for combining the output signals from each of the spatial equalizers;

a temporal equalizer for supressing inter-symbol interference from the combined signal;

a symbol sampler for sampling the symbols;

a tap controller for adjusting the tap weights of the spatial equalizers and the temporal equalizers.

9. The apparatus of claim 7 further comprising an appliance specific processor for processing the symbols to form an appliance compliant signal.

10. The apparatus of claim 1 wherein said gateway transmits signals in the 5.725 to 5.825 GHz band.

11. The apparatus of claim 1 wherein said gateway transmits 20 to 40 Mbits/sec in 6 MHz channels.

12. The apparatus of claim 11 wherein said gateway is capable of transmitting approximately 50 channels.

13. The apparatus of claim 3 wherein said transmitter produces signals in the 5.15 to 5.25 GHz band.

14. The apparatus of claim 3 wherein said transmitter produces QPSK modulated signals.

15. The apparatus of claim 1 wherein said gateway transmits 256-ary signals.

16. A neighborhood gateway for providing a wireless wide area network across a neighborhood of residences comprising:

    a plurality of tuner modules;

    a plurality of demodulators coupled to said tuner modules;

    at least one decoder coupled to said plurality of demodulators;

    a transmitter portion for modulating and transmitting a forward signal; and

    a receiver portion coupled to a gateway firewall for receiving commands from a network appliance to request one of said plurality of tuner modules to select a particular channel for transmission as a forward signal.

17. The apparatus of claim 16 wherein said plurality of tuner modules comprise one or more of the following tuners:

    a VHF tuner;

    a UHF tuner;

    a cable channel tuner; and

    a DSB tuner.

18. The apparatus of claim 16 further comprising:

    a reconfigurable ATM adaptation level 2 circuit coupled to an xDSL stream and to said gateway firewall.

19. The apparatus of claim 16 wherein said transmitter portion comprises:

    an encoder;

    an M-ary modulator; and

    a transmitter.

20. The apparatus of claim 19 wherein said M-ary modulator is a 256-ary modulator.

21. The apparatus of claim 16 wherein said receiver is a QPSK receiver.

22. A method of providing a wireless wide area network for a neighborhood of users comprising:

        receiving a channel selection signal from a network appliance;

        selecting a channel of information from a plurality of channels in response to said channel selection signal;

        demodulating and decoding a signal in said selected channel;

        encoding and modulating said signal to produce an M-ary signal; and

        transmitting said M-ary signal to said network appliance.

23. The method of claim 22 further comprising:

        receiving said M-ary signal at said network appliance; and

        demodulating and decoding said M-ary signal to display information to a user.

24. The method of claim 23 wherein said M-ary signal receiving step further comprises:

        receiving said M-ary signal at a plurality of antennas; and

        diversity combining said M-ary signals received by each antenna.